

# CCS Networking Seminar

August 2, 1996

# Purpose

To inform other CCS teams about the physical architecture of the CCS and the network connectivity.

To introduce security concepts.

# About the CCS Diagrams

Each of the four CCS network drawings are separate, independent configurations:

Development String: Your desktop connectivity.

Co-location I&T: Where CCS releases undergo I&T

Building 23 Shadow: Where CCS Releases go after completion of I&T and run in shadow mode

Building 23 Demo String: Where formal demos are held from Release 2+.

Most of the hardware for Release 1 is here and will be assembled into the following configuration in the next two weeks

# CCS Network Architecture

- CCS has a switched internetworking configuration
- Switched configuration allows dedicated, point-to-point connections
- Switched configurations utilize virtual LANs (VLANs) to logically segment the network

# CCS Hardware (Core)

- Front-End Processor (FEP) - Veda Box with HP 712/100 processor
- FEP Workstation - SGI Indigo 2
- Portable Space Craft Simulator (PSS)
- Cisco Catalyst 5000 network switch (Fast Ethernet, 10BaseT, ATM Lane modules)
- Core Data Server/Core CM Server - SGI Challenge L/XL
- Core RAID: SGI RAID
- Core Security Server - Sun Sparc20
- Core Firewall - Sun Sparc20

# CCS Hardware (Backbone)

- Analysis Application Server - SGI Indigo 2
- Analysis Workstation SGI - SGI Indy
- Analysis Workstation Sun - Sun Sparc20
- Analysis Workstation PC - 100 MHz Pentium
- Analysis Workstation Mac - PowerMac
- Ethernet Hub/Concentrator
- Backbone Security Server - Sun Sparc20
- Backbone Firewall - Sun Sparc 20
- Backbone Data Server/CM Server - SGI Challenge L/XL
- Backbone RAID: SGI RAID
- Network Manager - HP 755/125

# Front-End Processor (FEP)

The current FEP will reside in Building 23.

Four more Veda boxes are on order.

Output of FEP will travel over T1 line to Vision 2000 co-location facility.

Since capacity of a T1 line is 1.536 Mbps, T1 line can only support real-time data from the FEP.

# FEP Data Flows (Ingest only)

Known data flows coming into the FEP (in Nascom blocks):

- \* Real-time data - 32 Kbps
- \* Tape (ETR) dumps - 1 Mbps for a 15 minute duration
- \* Memory Dumps - 4 Kbps

Known data flows exiting the FEP (Note: Data flows out of the FEP in two concurrent streams, where one goes to the CORE data server and the other to the Backbone data server):

- \* Real-time (ISP) data - 1.3 Mbps (CDF)
- \* Tape (ETR) dumps - 5 Mbps
- \* Memory dumps - <1 Mbps

# External/Remote Connectivity

**Via the Front-End Processor:** NCC, DSN, UTC, SPIF, HST Simulators, WSGT

**Via Vision net (Backbone Firewall):** External Analysis LANs, Local Users, Remote and Public Users via Internet, Contractor Facilities, CNE, Pacor II, and test facilities (VEST, VSTIF, DASDF, ESTIF, SITS, SEER, and SMOR)

**Via Core Firewall:** Security Level 2 STScI facilities

**Via Modem:** Have no known requirements for direct modem access to the CCS for Release 1

# STScI Connectivity

Currently the STScI utilizes five T1 lines to Goddard.

Data rates to/from the STScI fall well within the bounds of the T1 line capacity

Vision 2000 co-lo, NBB, and STScI are examining a future ATM “cloud” among these key remote sites.

# Vision Net

- Campus-wide, ATM based network with FDDI backbone
- Most of the hardware is in place, individual members of the Vision Net “spoke “ are being connected online on a bi-weekly basis.
- Most CCS users in their respective Analysis LANs will access the CCS backbone via Vision Net

# ATM Prototyping

Cisco Lightstream 1010 ATM Switch will be used for performance and proof-of-concept tests.

Should video conferencing be added and current configuration suffer performance degradation, we'll be ready to move into ATM technology.

# System/Network Management

- Use a HP 755/125 as network manager
- Use COTS packages: HP OpenView Network Node Manager, CiscoWorks, VLAN Director
- Evaluating other various management tools - tools that provide security administration, system administration, performance monitoring, software distribution, fault tolerance/failover.
- Expect to select the management tools by August 16, then begin procurement